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ABSTRACT

This study examined the addition and expansion of graduate programs at primarily undergraduate colleges. The primary approach of the study was quantitative, consisting of descriptive and multivariate analysis of master's degree programs at colleges that were classified in 1994 as Baccalaureate Colleges. Data came from the 1994 and 2000 Carnegie Classification files, various components of the Integrated Postsecondary Education Data System, and the Williams Project on the Economics of Higher Education. Representatives from the graduate offices of eight colleges were interviewed. Evidence from the study offers modest support for the proposition that the expansion of mission at undergraduate colleges adding graduate programs is, at least in part, related to fiscal concerns. The wealthier an institution, the less likely it was to have added or expanded graduate programs. The limited test of market response in this study offers little evidence that increased demand for graduate education is driving these changes. The factors examined in this paper are better at explaining the growth of existing programs than they are at explaining the introduction of new ones. Findings from the quantitative analyses in combination with interview findings suggest there is no single set of factors that accounts for the addition or expansion of graduate programs in a diverse set of institutions. (Contains 1 figure, 6 tables, and 37 references.) (SLD)

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Evolutionary Losses? The Growth of Graduate Programs at Undergraduate Colleges

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Evolutionary Losses? The Growth of Graduate Programs at Undergraduate Colleges

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In 1990 David Breneman posed the provocative question, "Are We Losing Our Liberal Arts Colleges?" (Breneman 1990). While Breneman was concerned with the shift in curricular emphasis at undergraduate colleges signaled by the expansion of pre-professional studies, causing him to question the legitimacy of the term "liberal arts college," a related question concerns the survival prospects of the undergraduate college as an organizational form in U.S. higher education. The focus of this paper is on changes in the contours of the higher education system, specifically recent declines in the number of undergraduate colleges.[1]

Primarily undergraduate colleges ("Baccalaureate Colleges" according to the Carnegie Classification) make up a relatively small segment of higher education in the United States. In 1997-98, they enrolled about 7 percent of all students (12 percent of students at 4-year institutions) and produced 13 percent of all bachelor's degrees (McCormick 2001). They nevertheless constitute an ideal type within U.S. higher education: depictions of the collegiate experience in the popular media commonly invoke images of the small undergraduate college, and such colleges represent the closest present-day embodiment of the institutional form in which higher education was first established in the new world, the colonial college. More importantly, the undergraduate college has been shown to be an effective educational setting. Using longitudinal data, Astin found that attendance at private colleges (which constitute 85 percent of Baccalaureate Colleges) is positively associated with bachelor's degree completion as well as student satisfaction with faculty and quality of instruction (Astin 1993; Astin 2000). More

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[1] Throughout this paper, the terms liberal arts college, undergraduate college, and baccalaureate college are used interchangeably and without reference to specific curricular characteristics.

recently, the National Survey of Student Engagement (NSSE) has shown that several composite measures of educationally beneficial attributes and practices (academic challenge, active and collaborative learning, interaction with faculty, and supportive environment) are highest among baccalaureate colleges (National Survey of Student Engagement 2000). In addition, research on the academic workforce has shown that a disproportionate share of doctorate recipients earned their bachelor's degrees at undergraduate colleges, suggesting that these institutions play an important role in maintaining and renewing the professoriate (Fuller 1986). In view of these findings, losses in this sector should be of concern to educators and policy makers.

Despite their cultural significance and educational importance, undergraduate colleges are indeed on the decline. In 1973, the first edition of the Carnegie Classification listed 721 "Liberal Arts Colleges," accounting for a quarter of all institutions. The 1994 edition listed 645 "Baccalaureate Colleges," and in the most recent revision they numbered 606, representing 15 percent of the institutional universe (McCormick 2001). These changes occurred in the context of a steadily expanding higher education system: between 1973 and 2000, the number of doctorate-granting universities increased by half, and comprehensive ("Master's") universities grew by one-third. Only undergraduate colleges declined, by 16 percent (table 1).

[table 1 here]

Because category definitions have changed with almost every revision of the Carnegie Classification, the meaning of these trends is not immediately clear. But the 1994 and 2000 criteria for Baccalaureate Colleges are comparable, despite changes in subcategory definitions. This paper focuses on changes during this period. It is important to note that "Baccalaureate Colleges" are not necessarily exclusively undergraduate colleges: in both editions, the category included institutions with modest graduate programs that did not meet the criteria for inclusion in

the Master's (Comprehensive) category (at least 20 master's degrees per year). In addition, a small number of institutions classified as Baccalaureate Colleges (24 in 1994 and 15 in 2000) had first-professional programs—usually an affiliated law school or seminary.

A common assumption is that the decline in undergraduate colleges reflect closures due to financial distress, an assumption reinforced by the publicity that such closures receive. In fact, closures accounted for few of the recent changes: of the 645 Baccalaureate Colleges in 1994, 527 retained their status in 2000; 105 were reclassified; and only 13 dropped out of the institutional universe due to closures, mergers, and losses of accreditation (figure 1). Of the 105 reclassifications, most (91) were to the Master's categories, reflecting the addition or expansion of graduate programs (Carnegie Foundation for the Advancement of Teaching 2001). (During the same period, 12 institutions moved in the opposite direction.) This pattern suggests that while the institutions themselves may endure, the changes undertaken may amount to an abandonment of the undergraduate college model. This background frames the research questions for this study:

- Among 1994 Baccalaureate Colleges that met the criteria for classification in the Master's (Comprehensive) categories in 2000, how many added new master's programs and how many expanded existing ones? In what fields?
- What accounts for the addition or expansion of master's programs at Baccalaureate Colleges?
- What do these changes signify? Do these changes alter the nature of the institution to the point that they have abandoned the undergraduate college model, or is the primacy of the undergraduate education mission being preserved?

[figure 1 here]

As the above questions make clear, this study is not about changes in institutional

classifications, but about the addition and expansion of graduate programs at primarily undergraduate colleges (regardless of the resulting classification). Changes in the Carnegie Classification over time serve only to call attention to this phenomenon, and the classification criteria serve as a convenient and consensually understood reference point for differentiating relatively modest graduate programs from larger ones.

Organizational change and adaptation in higher education

One approach to organizational change in higher education institution draws on population ecology theories that explore institutional adaptation to changing circumstances (Zammuto 1984). Population ecology offers a group-level analysis that borrows biological concepts of niche and selection to explain why there is neither just one form of organizations in a given field, nor unlimited variety. According to this view, organizations must determine a niche that they can serve, which may change over time. Organizational environments are subject to fluctuations that require strategic responses and adaptation, and organizational forms ill suited to a changed environment may disappear (Hannan and Freeman 1977; McKelvey and Aldrich 1983; Smith 1993).

Academic drift offers another lens for explaining change in colleges and universities, explaining why institutional diversity diminishes over time as institutions transform themselves and converge toward a single model (for example, see Reisman 1956; Neave 1979; Aldersley 1995; Morphew 2002). Typically, the argument is that all colleges and universities seek to emulate the research university model, and that any movement "up" the Carnegie Classification represents progress toward this goal. Academic drift fits the more general phenomenon of institutional isomorphism from the organizational behavior literature: organizations mimic the structure, organization, and processes of successful organizations within their organizational field (DiMaggio and Powell 1983). In so doing, they seek to attract the prestige and resources enjoyed

by high-ranking institutions. This interpretation follows the basic tenets of both resource dependence and institutional theories (Meyer and Rowan 1977; Pfeffer and Salanckik 1978; DiMaggio and Powell 1983). Resource dependence emphasizes the resources critical to organizational survival and success, while institutional theories emphasize the importance of organizational legitimacy to survival in the absence of clear standards of organizational performance. In both approaches, organizations adopt the structure and practices of successful organizations to enhance their ability to attract needed resources and legitimacy. In the case of colleges and universities, key resources include financial support from alumni, foundations, and government; respected faculty; and a steady supply of talented students. Prestigious universities are very effective in attracting these resources, leading other institutions to follow their model in the hope of duplicating their success.

Why are undergraduate colleges changing?

During the past two decades, many studies have sought to explain change at undergraduate colleges, but there has been little attention to the addition or growth of graduate programs. One strand of past research is compatible with resource dependence perspectives in tracing efforts by small colleges to increase revenues and efficiency through organizational restructuring, enrollment management, and expanded pre-professional (as opposed to liberal arts) degree offerings, (Carter 1986; Breneman 1990; St. John 1991; Breneman 1994). Analyzing data from the College Student Experiences Questionnaire from the 1980s and 1990s, Pace and Connolly found a declining level of liberal arts emphasis at "liberal arts" colleges, asserting that some colleges were becoming "small professional schools" (Pace and Connolly 2000). Other studies have similarly questioned whether liberal arts colleges are abandoning their traditional focus by reorienting their missions towards professional or other educational fields (Zammuto 1984; Carter 1986; Gilbert 1995; Delucchi 1997). And from a more explicitly normative

perspective, Neely expresses concern that liberal arts colleges are increasingly adding research programs to attract funding, in essence becoming "research colleges" (Neely 2000). All of these works reflect concerns about the viability of the small liberal arts college, and whether these colleges will eventually abandon this model. But none has inquired into the addition or expansion of graduate programs.

Invoking both resource dependence and institutional theories, Morphew (2002) follows a set of questions related to academic drift by studying institutions that have dropped the "college" label in favor of "university." This is the only study that explicitly incorporates the growth of graduate programs among the changes at work within the institutions, but it focuses on the motives for a name change and not on the underlying change processes that culminated in the name change.

For the present study, we consider two possibilities to explain the growth of graduate education at undergraduate colleges: academic drift on the one hand, and revenue enhancement/market response on the other.

Academic drift

We are skeptical of the relevance of academic drift as conventionally understood to account for the changes considered here. Most discussions of academic drift focus on transitions among the categories of doctorate-granting institutions, or from the comprehensive to doctorate-granting categories (Aldersley 1995). Many undergraduate colleges enjoy a prestige that is quite distinct from that of research universities, linked to an ethic of individual attention to students in a nurturing environment: small classes, low student-faculty ratios, and a community of scholars dedicated to excellence in undergraduate liberal education (Hawkins 2000; Morphew 2002). The undergraduate college is itself a well established organizational form in U.S. higher education,

with many high-status exemplars. Neely's observation that some colleges may increasingly emphasize faculty research and scholarship notwithstanding, there is little evidence that undergraduate colleges aspire to become research universities with respect to their *programmatic* structure.[2] Indeed, for many institutions it is far from clear that movement into the Master's category will confer any concrete benefits at all. When the preliminary edition of the 2000 Carnegie Classification was released, many institutions that had been shifted into the Master's categories submitted urgent appeals that they might to retain their prior classification among Baccalaureate Colleges—in the case of one school, offering to convene an emergency board meeting to immediately discontinue its single master's program. The concerns expressed by these institutions ranged from the rhetorical and symbolic, invoking strong traditions of, identity with, and commitment to undergraduate education; to the practical and consequential, invoking the comparison group to which the institution would be assigned in the *U.S. News and World Report* annual college rankings.

Nevertheless, it is possible that colleges are emulating a different model of success: several prestigious liberal arts colleges have graduate programs of appreciable size. For example, in 2001-02, Smith, Bryn Mawr, Middlebury, Wesleyan, and Williams awarded 153, 105, 93, 77, and 36 master's degrees, respectively, (all but Williams have small doctoral programs, as well). These programs notwithstanding, the Carnegie Foundation retains these institutions among Baccalaureate Colleges due to their strong traditions and identities as liberal arts colleges. However, other equally well-regarded and successful liberal arts colleges (e.g., Amherst, Bowdoin, Carleton, Haverford, Pomona, and Swarthmore) remain strictly undergraduate

[2] A variation on the academic drift argument is related to faculty priorities and preferences, and here Neely's observations may have particular relevance. As academic professionals whose socialization into the norms and values of the profession occurred in a research university setting, faculty at undergraduate colleges may welcome the opportunity to work with advanced students in their field as a way to bring their professional life into closer congruence with the university model of the academic career. In such cases, graduate programs may improve faculty recruitment and retention. Although the current study does not permit testing this variation, further research should explore the relationship between graduate programs at undergraduate colleges and faculty morale, recruitment, and retention.

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institutions. Furthermore, knowledgeable people are often surprised to learn of the presence of graduate programs at the institutions named above. It does not appear that the presence of graduate programs is a prominent marker of success within this organizational field.

Revenue enhancement/market response

Another account is in the resource dependence tradition, based on institutional finances and the benefits of expanding and diversifying an institution's revenue base. Colleges that seek to boost revenues must typically choose from a limited set of strategies: increase nontuition income (external support, endowment income, and revenue from auxiliary operations); increase enrollment; increase tuition and fees; or reduce student financial aid. Strategies that focus on the demand side increase enrollment through actions such as: improving recruitment into existing programs; improving retention; reducing selectivity; or adding new programs that expand the pool of potential students. For many institutions, the first three may be impractical, uncertain, or unpalatable. The fourth strategy, on the other hand, may be relatively easy to implement by responding to growing demand for training at the master's level (Schneider 1999).

In the 1990s, the number of master's degrees awarded grew at more than twice the rate of bachelor's degree growth. From 1988-89 to 1997-98, the number of master's degrees awarded nationally increased by 39 percent, compared with 16 percent growth in bachelor's degrees (NCES 1993; NCES 1995; NCES 1997; NCES 1999; NCES 2001). The growth in demand for master's level training over this period has been uneven across states, however, ranging from a low of 5 percent in Indiana to a high of 159 percent in Nevada. To the extent that these differences reflect differences in market demand (they may also reflect changes in the supply of master's programs) colleges may differ in their ability to participate in this expanded market.

Tuition revenue from graduate students may offer a way to compensate for falling net

tuition revenue in the undergraduate program. The growth of "unfunded" institutional financial aid is a serious challenge for private colleges (Breneman 1994; McPherson and Schapiro 2000). While in universities the undergraduate program may subsidize more costly graduate programs (James 1978), the reverse may be true at undergraduate colleges, where tuition revenue from master's students can ease the increasing financial strain brought on by tuition discounting. This potential of graduate programs to provide such cross-subsidy adds to their appeal.

If the addition of graduate programs is a response to financial hardship, we should expect the addition or expansion of graduate programs to be more common among the more tuition-dependent colleges (that is, those that rely more heavily on tuition, rather than income from endowment and annual giving, to finance their operations). And if it is a response to market demand, we should expect to find a relationship with measures of local or regional demand for master's level training.

Methods

The primary approach to the study is quantitative, consisting of descriptive and multivariate analysis of master's degree programs at colleges that were classified in 1994 as Baccalaureate Colleges. As noted earlier, some institutions with strong liberal arts college traditions and identities are routinely retained in the "Baccalaureate" categories, despite the presence of appreciable graduate programs. Because of their potential to confound the analysis, these institutions have been excluded from the subject population. Although the study is not about changes in institutions' Carnegie Classifications, the descriptive analysis uses the Master's category criterion of 20 master's degrees per year as a threshold level to signal noteworthy change.

The multivariate analysis models the size of the master's program in the period analyzed

for the 2000 edition of the Carnegie Classification, controlling for institutional control, size, and wealth; presence and size of a master's program in the period corresponding to the 1994 Classification; and a measure of demand for master's level training in the state where an institution is located. Because the analysis is based on the entire population rather than a sample, inferential statistics are not applicable here and statistical significance is not reported.

To supplement the quantitative findings and dig deeper into the last research question—whether these changes fundamentally alter the institution and represent abandonment of the undergraduate college model—we conducted semi-structured telephone interviews with the directors of graduate education at eight colleges that had added or significantly expanded their master's programs. We asked about the reasons for establishing the graduate programs, their organization, interactions between undergraduate and graduate students, and how the experience of graduate students (e.g., faculty, location and scheduling of classes, full- and part-time enrollment, residence) differs from that of undergraduates. We also collected information about the types of students that attend the programs, how the programs have grown over time, and the institutions' future plans for graduate education.

To choose the colleges to contact, we first divided the colleges into three groups according to endowment per full-time equivalent (FTE) student. We then divided these groups with respect to the nature of growth in graduate programs: significant growth in the number of master's degrees granted (growth of 50 or more per year), and more moderate growth. We chose two schools from each of the six resulting groups, selecting so as to maximize geographic diversity. We contacted all twelve, and were able to interview representatives from the offices of graduate programs at eight of the schools.

Data

Quantitative data for the study come from four sources: the 1994 and 2000 Carnegie Classification data files from The Carnegie Foundation for the Advancement of Teaching; various components of the Integrated Postsecondary Education Data System (IPEDS) of the National Center for Education Statistics; and the Williams Project on the Economics of Higher Education.

Master's degree conferral data are based on the IPEDS "Completions" survey for two three-year periods: 1988-89 through 1990-91 and 1995-96 through 1997-98. These correspond to the data that were used to generate the 1994 and 2000 editions of the Carnegie Classification. The Completions survey reports degree conferrals by institution, degree type, and field of study. Three-year averages of each institutions' master's degree conferrals were computed to match the classification methodology. For the analysis of master's program subject areas, the 1997-98 data were used. Annual growth of master's degrees at the state level were calculated from previously cited figures from NCES, which are also based on IPEDS Completions data.

Enrollment and finance data are drawn from the IPEDS "Fall Enrollment" and "Finance" surveys for 1991-92, corresponding to the last year of data used for the 1994 Carnegie Classification. Full-time equivalent (FTE) enrollment was calculated as full-time enrollment plus one-third part-time enrollment. Two measures of institutional wealth were created from the finance data: total education and general (E&G) expenditures per FTE student, and endowment per FTE student (beginning of year market value).

Finally, data on each institution's "educational subsidy" per FTE student, an alternative measure of institutional wealth that takes into account the full cost of education, come from the Williams Project on the Economics of Higher Education. (These data correspond to academic year 1995-96; equivalent data for the earlier period were not available.) Briefly, the educational

subsidy supplied by an institution is the estimated total cost of education (including an estimate of rent for its real property), plus financial aid, minus tuition and fee revenue. This measure offers several advantages over the endowment measure, but two are particularly noteworthy: first, it recognizes that an institution's assets include more than its endowment portfolio; and second, it affords better comparability between private and public institutions (13 percent of the target population are public institutions). For more information on this approach to assessing institutional wealth, see Winston and Yen (Winston and Yen 1995).

Findings

We begin with a simple descriptive presentation of the changes observed between the 1994 and 2000 editions of the Carnegie Classification. Since each edition relied on prior years' data, the analysis considers average annual master's degree awards during two three-year periods: 1988-89 through 1990-91, and 1995-96 through 1997-98.

Tables 2 and 3 provide an overview of master's degree activity at the target population of institutions during the time periods corresponding to the 1994 and 2000 editions of the Classification. When they were classified as Baccalaureate Colleges in 1994, nearly a quarter of these colleges (23 percent) had master's programs. By the time of the next edition, 38 percent did, representing the addition of graduate programs at 95 institutions and their apparent elimination at 10.[3] While most institutions retained their characteristics (either exclusively undergraduate, or "undergraduate-plus" to modify Breneman's terminology for an undergraduate college with graduate programs), this table illustrates the basic pattern that motivated this study: about one in five exclusively undergraduate colleges added graduate programs, while only about one in 13 undergraduate plus colleges dropped their graduate programs.

[3] Because the figures for program presence are based on degree conferrals, they may be slightly underestimated due to the time lag between program establishment and the production of graduates. Similarly, three-year averages understate program size when programs are growing and awards trend upward.

Of the 95 colleges that added new master's programs, 64 added relatively small programs, generating fewer than 20 degrees per year, while the remaining 31 added larger programs (table 3). And of the 134 schools that already had a program in place, just over half expanded their programs to meet the Master's criterion of 20 or more master's degrees per year. Out of all schools analyzed, eleven added or expanded to the point that they were awarding over 100 master's degrees per year.[4] In the following pages, we refer to the 102 institutions that averaged at least 20 master's degrees per year over 1996-98 as "expanding colleges," meaning that they added or expanded master's programs to the point that they met the criteria for classification among Master's Colleges and Universities.

[tables 2 & 3 here]

In what fields did these colleges offer graduate training? In 1997-98, the largest numbers of master's degrees nationally were awarded in education and business (27 and 24 percent, respectively); 12 percent were in the arts and sciences (NCES 2000, table 255). Education and business also dominated among the 102 expanding colleges, but these colleges show a much higher emphasis on education programs: 86 institutions awarded master's degrees in education, accounting for 43 percent of the 6,772 master's degrees awarded by the expanding colleges in 1997-98.[5] Master's degrees in business, awarded by 50 schools, amounted to 28 percent of the total. Forty-eight institutions awarded master's degrees in the arts and sciences, accounting for 12 percent of the total, the same as the national proportion of master's degrees awarded in these fields. Field patterns were nearly identical among the remaining colleges with master's programs. Aside from their focus on education and business, the expanding colleges seldom offer master's

[4] These figures use three-year averages. In 1997-98, 20 of these schools awarded at least 100 master's degrees.
[5] The IPEDS Completions data do not identify different types of master's degrees, so it is not possible to distinguish M.A.T. and M.Ed. degrees.

degrees in public health and administration and allied health fields that are offered by comprehensive state universities and doctorate-granting universities.

The emphasis on education programs likely reflects the national policy context of the late 1980s and early 90s. After a decrease in the early 1980s, master's programs in education increased in popularity, following several influential reports on the teaching profession that recommended ways to improve teacher training. The Task Force on Teaching as a Profession (1986) predicted a growing shortage of teachers and recommended the development of a new Master in Teaching degree to set higher professional standards for the profession (Task Force on Teaching as a Profession 1986). The Holmes Group (1986) also outlined a three-tiered professional development ladder for teachers that encouraged graduate training in teaching (Holmes Group 1986). The Holmes Group emphasized particularly the importance of undergraduate liberal education for prospective teachers—meaning majors in the arts and sciences, rather than in education—and this may have led many liberal arts colleges to answer the call by playing to their strengths by offering MAT programs in the arts and sciences for both practicing and prospective teachers.

Next, we briefly review some basic descriptive information about these colleges relative to the presence and size of master's programs from 1995-96 through 1997-98. As shown in table 4, public institutions were present in each category, and somewhat more common among schools with no master's program (15 percent) than among those with master's programs of sufficient size to be reclassified (10 percent). The undergraduate college is an uncommon form in public higher education, and their claim to distinctiveness, as well as the different financing of public institutions, may explain this difference.

[table 4 here]

Institutions that awarded at least 20 master's degrees per year were, on average, somewhat larger than their fellow institutions with no graduate program or with a modest one. While these differences appear small (about 300 students, and 100-200 in FTE terms), it is important to recall that the institutions in this population are quite small, averaging about 1,600 headcount and 1,300 FTE students.

Three measures of wealth are presented in table 4: total education and general (E&G) expenditures per FTE, endowment per FTE, and subsidy per FTE.[6] While the differences with respect to E&G spending are small (but in the expected direction), the pattern with respect to the other two measures is quite striking: schools with no master's program had the highest average endowment per FTE and the highest subsidy per FTE, those with larger master's programs had the lowest averages, and those with modest master's programs fell in between. From a purely descriptive standpoint, it appears that the propensity to add or expand master's degree programs is inversely related to institutional wealth.

Multivariate analysis

To examine the interplay of these various factors, and more importantly their independent effects, we present two linear regression models in table 5. Both models predict the average number of master's degrees awarded per year between 1995-96 and 1997-98, controlling for presence and size of the master's program seven years earlier; institutional control, size, and wealth; and annual rate of growth in master's degree production in the state between 1988-89 and 1997-98.[7] The "simple" model constrains coefficients to be equal for schools with and without master's programs initially, while the "dual effects" model uses interaction terms to allow coefficients to differ for schools with and without master's programs in the initial period.

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[6] Correlations between pairs of these measures range from .50 to .78.

[7] We used educational subsidy as the wealth measure because it affords better comparison between public and private institutions, and because fewer schools would be eliminated from the analysis due to missing data.

The regression results generally confirm the descriptive findings: after controlling for the initial presence and size of a master's program, these programs grew less at public institutions and at wealthier institutions, and they grew more at larger institutions. The annual rate of growth in master's degree production in an institution's state also had a positive effect, but it was extremely small (adding about one additional degree for every two points in annual degree growth in the state; the average annual growth rate was 3.8 percent per year).

[table 5 here]

The dual effects model also shows quite clearly that the process operates differently for schools with and without a master's program in the initial period. The dual effects approach accounts for nearly a third of the variation in master's program size, compared with about one-fifth for the simple model.

The control, enrollment and wealth effects are much stronger at schools that already had a master's program in place. Relative to private institutions, public colleges are predicted to have added fewer master's degrees over the period studied. The enrollment effect is trivially small and negative at schools with no program initially, predicting only 0.2 fewer master's degrees for an additional 1,000 FTE students. From a practical standpoint, then, size is not a meaningful predictor of master's program addition at strictly undergraduate colleges. For schools that already had a program, however, an additional 1,000 FTE students corresponds to 18 more master's degrees, close to the criterion for classification outside Baccalaureate Colleges. For each additional $3,000 in educational subsidy per FTE, the model predicts about one less master's degree at schools without a program already in place, and 5.3 fewer at schools that already had a master's program—a modest effect, at best. Unlike these institutional structural factors, the level of demand for master's training in the state had comparably low impact for schools with and

without a master's program in place.

The model's explanatory power is substantially lower for exclusively undergraduate schools than for undergraduate-plus schools. As an alternative to the dual effects model with interaction terms, we estimated separate models for schools with and without master's programs in the initial period. While producing results that are algebraically equivalent to the dual effects model, they produced R-squared values of .252 for undergraduate-plus schools but only .025 for exclusively undergraduate schools. This model explains only a tiny fraction of the variation in 1996-98 master's degree production among colleges that did not already have a graduate program in place, and thus it does little to help explain the introduction of master's programs at such colleges.

Interviews with campus personnel

We interviewed representatives from the graduate offices of the eight schools listed in table 6. Except for Cameron University, all are private institutions. They range in undergraduate selectivity from an acceptance rate of 67 percent (Piedmont College) to 91 percent (George Fox University), with most accepting about four out of five applicants. The final list of schools interviewed includes four that awarded 100 or more master's degrees in 1997-98. Since only 20 schools in the study had programs that grew to this scale, the findings from these interviews may be more representative of schools with significant growth. Details about the institutions and the size and growth of the their master's programs are summarized in table 6. Although the foregoing quantitative analysis concludes with 1997-98, it is clear from the table that many master's programs have continued to grow, sometimes dramatically.[8]

[table 6 here]

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[8] This also suggests that the 3-year averages used in the quantitative analysis likely understate the extent of master's program addition and growth.

The graduate programs at these schools started recently, with the exception of Loras College, which opened its program in 1963. Most were established in the 1980s or early 1990s, increasing in both the number of students and programs since then. All of the colleges anticipate increasing demand for graduate studies, particularly in professional fields, and plan further expansion; three institutions have new programs planned for the next year or two, and four plan to increase enrollments in their current offerings. Most of the master's degrees awarded at these institutions in the year 2001-02 were in education, except for Cameron University and Lebanon Valley College, which awarded most of their master's degrees in business, and Mount Mary College, where the most master's degrees are in art therapy.

These institutions established graduate programs for various reasons, but nearly all of the interviewees cited local and undergraduate student demand as a significant factor, particularly in the case of education programs. Lebanon Valley College offers the only science education master's program in its part of central Pennsylvania, and plans to add a similarly needed music education master's program in 2002. According to the directors, program demand is gauged through the institutions' work in local school districts for teacher certification programs and through feedback and the interest expressed by alumni. The exception again is Loras College, which established its master's programs when the Catholic University of America discontinued its branch graduate program at the college in 1963. Another impetus for establishing a master's program was the existence of a strong undergraduate program in a related field. This was the case for the art therapy master's program at Mount Mary College.

Many studies of organizational change at research universities note the importance of government policies. Federal and state government policy, particularly in education, also appears to affect the choices of these colleges. A teacher shortage and a scholarship program for teaching credential programs in Georgia led Piedmont College to establish master's programs in teacher

preparation and certification in 1995. The Interim Director of Adult and Graduate Studies at another college described a plan to revamp the college's MAT degree to focus on reading in response to the No Child Left Behind act of 2001. Although small private institutions may be more immune to public policy changes than larger and public institutions, education policy does appear to have influenced program decisions at these institutions. In this respect, these colleges clearly appear to be orienting themselves to new opportunities presented by policy changes.

In the quantitative analysis of the expanding colleges, state-level demand for master's degrees appears to have little effect on the establishment or expansion of graduate programs. This finding may indicate that the relevant market for these institutions is more local, particularly for graduate education. The eight institutions interviewed draw their students from a limited geographic area, and the directors reported that their graduate students reflect this local focus to an even greater extent, since most of the graduate students work while attending school and live off campus. Convenience and location were often mentioned as reasons that students choose these institutions for graduate work. One director even mentioned the relative ease of parking at her campus as a reason graduate students might choose her institution over the state university. These schools appear to compete for graduate students with a different set of institutions than the ones they compete with for undergraduates; many of the directors mentioned much larger institutions, including state universities, as their main competition. Although the students seek a type of degree not traditionally associated with undergraduate colleges, the directors of the graduate programs felt that the traditional strengths of small colleges, such as individual attention and smaller classes, helped their programs compete against those of less expensive public institutions.

The graduate students at these colleges differ considerably from the undergraduate population. As the Director of Graduate Studies at Piedmont College noted, the master's students are "non-traditional in every sense of the word." Most have work experience, often in fields

other than their graduate studies, are older, and generally do not participate in campus social life. In two of the degree programs, applicants are required to have work experience in a related field before applying. In a noteworthy exception, however, graduate students at these schools have something in common with their undergraduate counterparts: about one-third to one-half of are alumni of the college.

We asked our informants about the extent to which the same faculty teach and advise both undergraduate and graduate students, to try to get at the extent to which the graduate program may impact the undergraduate experience. We found that the extent of faculty "overlap" depends on where and when graduate classes are held. At Doane and Piedmont Colleges, where graduate programs have separate facilities, few faculty members teach in both programs. At Le Moyne College, by contrast, all but one faculty member in the graduate education program teach both undergraduate and graduate students. We found that at most schools contacted, most faculty members teach at both levels. At all of the schools, advanced undergraduates might attend graduate classes, particularly if an undergraduate major in the master's degree field is also offered.

Institutional financial aid available to graduate students at these schools is very limited, and most students pay tuition rates similar to those charged to undergraduates. At the schools where graduate tuition is less than that paid by undergraduates, the directors explained that graduate students often do not need many of the services provided to undergraduates, such as health care and student activities. In states like Georgia, the state offers tuition aid for teacher training, and some of the directors noted that employers often pay part or all of the costs of an MBA program.

The extent to which graduate programs affect the undergraduate experience is not always

obvious from figures on enrollments and degrees. For example, Piedmont College awarded 263 bachelor's degrees and 410 master's degrees in 2001-02. These figures suggest that the college is heavily oriented toward graduate education. Yet 395 of the master's degrees were in the teacher education program, which conducts most of its classes off campus, in school district offices. Graduate students in situations such as this are essentially invisible to undergraduates, and it would be difficult to argue that even a large graduate program conducted off-site compromises undergraduate experience or the campus's focus on undergraduate education.

Graduate program directors were aware of potential conflicts between undergraduate and graduate programs on their campus, and noted ways in which the two levels are kept separate. When Le Moyne College established graduate programs in the mid-1990s, planners and trustees were concerned about the impact of this change on the college's traditional undergraduate focus. Le Moyne's Director of Graduate Education Studies described the resulting temporal division of the campus: "It was decided that undergraduates would have priority for facilities, faculty, and even parking before 5 p.m., and that after 5 p.m. graduate students would have priority." As in the case of Le Moyne, the interactions between undergraduates and graduate students at most of the institutions are limited. At Doane College and George Fox University, graduate classes are held mostly on evenings and weekends on a different campus from that of the undergraduate programs. The colleges also offer education and teaching training programs in the summer.

The experience of graduate students appears to be quite separate from that of undergraduates at these institutions. Contact between graduate and undergraduate students is limited; most graduate classes are held at different times, and sometimes in different locations, from undergraduate classes. Outside the classroom, undergraduates and graduate students lead lives with different obligations and environments. Many of the directors reported that their graduate students typically work while attending school and make little use of campus

recreational facilities and social events. While most of these colleges offer residential facilities for undergraduates, the graduate students generally live off campus and commute to the college. The most common point of overlap between the undergraduate and graduate programs appears to be the faculty, since at these institutions most of the graduate program faculty also teach undergraduates. The overall impact may be slight at schools that offer few graduate programs, but as the number of programs expands to overlap with more of the undergraduate curriculum, the potential for conflict between service to undergraduate and graduate programs increases. While in these situations a department might take on additional faculty, and consequently offer a wider array of undergraduate courses, in so doing the institutional profile begins to take on the characteristics of a comprehensive university. How faculty at expanding colleges manage their teaching and advising responsibilities with each group of students is beyond the scope of this study, and deserves attention in future research.

Discussion and implications

Recent years have witnessed a decline in the number of "pure" undergraduate colleges—those whose educational operations focus exclusively on undergraduate education—with one college in five having added graduate programs between the periods analyzed for the 1994 and 2000 editions of the Carnegie Classification. In addition, about half of the colleges that already had modest graduate programs expanded their programs to the point that they were eligible for reclassification as Master's (or Comprehensive) Universities. But what these changes signify—whether the sky is falling for a highly valued organizational form in U.S. higher education—is less clear.

The evidence offers modest support for the proposition that this expansion of mission at undergraduate colleges is, at least in part, related to fiscal concerns: the wealthier an institution, the less likely it is to have added or expanded graduate programs. But the depressant effect of

institutional wealth is stronger for schools with existing graduate programs than it is for schools that did not already have a program in place. The limited test of market response offers little evidence that increased demand for graduate education is driving these changes, but a more nuanced test that taps localized demand, as well as supply—such as the availability of existing master's programs in business and education within a geographic radius of the institution—is warranted.

The factors examined in this paper are much better at explaining the growth of existing graduate programs than they are at explaining the introduction of new ones. To the extent that the decline in pure undergraduate colleges is of greater concern than expansion at colleges that already offer graduate programs, more detailed investigation is warranted. Revenue enhancement and market response alone are inadequate to explain the addition of graduate programs at strictly undergraduate colleges.

Findings from the quantitative analysis, in combination with the interview findings, suggest there is no single set of factors that accounts for the addition or expansion of graduate programs in a diverse set of institutions. In other words, institutional change of this sort is likely to be highly situationally dependent and context specific.

Institutional classification aside, the important question remains, "Do these changes amount to a shift in the fundamental character of these institutions, and thus an abandonment of the undergraduate college model?" The qualitative component of the study helps to illuminate this question, but it also suggests further questions. Several schools have worked to maintain separation between their undergraduate and graduate programs, through scheduling or by locating graduate classes off campus. This points to a difficulty in inferring the impact of a graduate program on institutional identity by merely examining the relative size of undergraduate and

graduate enrollments or degree conferrals. Further research might inquire more deeply into how effectively such schools can shelter their undergraduate program and preserve the look and feel of an undergraduate institution while responding to the market for master's level training. This also suggests a possible dilemma for the expanding schools: the appeal of graduate studies at these colleges resembles that of undergraduate colleges more generally—small classes and individual attention. These graduate programs compete with much larger institutions, often public ones, by offering the advantages associated with a small college. But does this strength undermine efforts to isolate the graduate program? Will we see, over time, the movement of graduate programs from periphery to the institutional core, in both symbolic and geographic terms?

Despite efforts at sheltering the undergraduate program, graduate faculty at most schools contacted also teach undergraduates. How faculty manage their graduate program responsibilities and what provisions are made by the colleges to assist them in this task may be key for understanding the balance between graduates and undergraduates in expanding colleges. This, in turn may be key to understanding whether this phenomenon is a signal of evolutionary losses, or effective adaptation.

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Figure 1—Baccalaureate Colleges in 1994 by 2000 Classification
(N = 645)

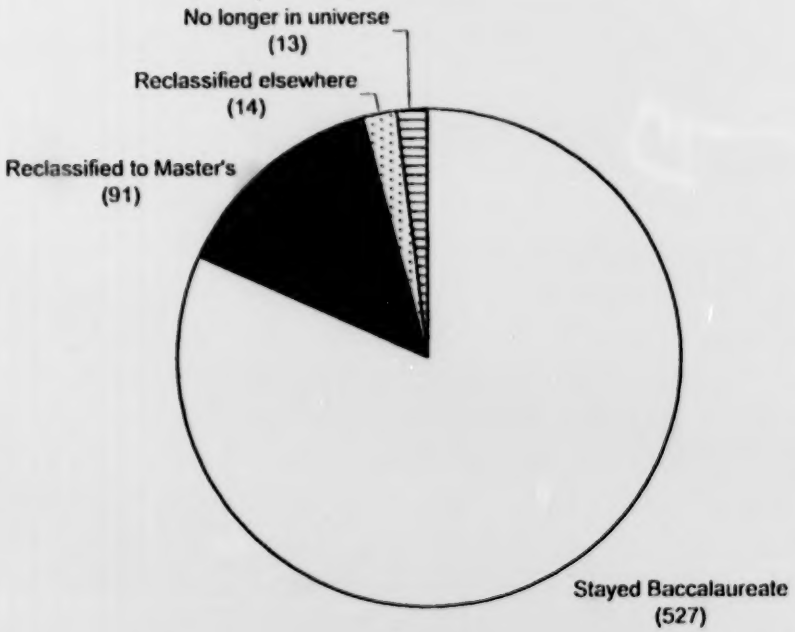

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Table 1—Changes in the U.S. Higher Education System from 1973 to 2000

Carnegie Classification category	1973	2000	Percent change
Doctorate-granting Universities	173	261	50.9
Comprehensive/Master's Universities	456	611	34.0
Liberal Arts/Baccalaureate Colleges	721	606	-16.0
Two-Year/Associate's Colleges	1,063	1,669	57.0
Specialized Institutions & Tribal Colleges	424	794	87.3
Total	2,837	3,941	38.9

SOURCE: Adapted from McCormick, 2001, table 5.

Table 2—Among 1994 Baccalaureate Colleges, Number With and Without Master's Programs, 1989-91 and 1996-98

	1996-98		
1989-91	Awarded no master's degrees	Awarded master's degrees	Total
Awarded no master's degrees	349	95	444
	(78.6)	(21.4)	(100.0)
Awarded master's degrees	10	124	134
	(7.5)	(92.5)	(100.0)
Total	359	219	578
	(62.1)	(37.9)	(100.0)

SOURCE: IPEDS Completions data.

NOTES:

1. Row percents in parentheses.
2. The 1994 Classification was based on data from 1988-89 through 1990-91, and the 2000 Classification was based on data from 1995-96 through 1997-98.
3. This table excludes institutions that were classified as Baccalaureate Colleges in 1994 despite awarding 20 or more master's degrees per year.

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Table 3—Among 1994 Baccalaureate Colleges, Presence and Size of Master's Programs, 1989-91 and 1996-98

	Master's program, 1996-98			
Master's program, 1989-91	No program	Modest program	Larger program	Total	Average number of degrees, 1989-91
No program	349	64	31	444	0.0
	(78.6)	(14.4)	(7.0)	(100.0)	
Modest program	10	53	71	134	4.4
	(7.5)	(39.6)	(53.0)	(100.0)	
Total	359	117	102	578	2.0
	(62.1)	(20.2)	(17.6)	(100.0)	
Average number of degrees, 1996-98	0.0	~~#REF!~~ 8.3	~~#REF!~~ 50.8	~~40.4~~ 10.6	

SOURCE: IPEDS Completions data.

Category definitions:
Modest program - fewer than 20 master's degrees per year
Larger program - 20 or more master's degrees per year

NOTES:
1. Row percents in parentheses.
2. Program size based on the average number of master's degrees conferred per year.
3. The 1994 Classification was based on data from 1988-89 through 1990-91, and the 2000 Classification was based on data from 1995-96 through 1997-98.
4. Institutions awarding 20 or more master's degrees per year were classified among Master's Colleges and Universities.
5. This table excludes institutions that were classified as Baccalaureate Colleges in 1994 despite awarding 20 or more master's degrees per year.

Table 4—Among 1994 Baccalaureate Colleges, Selected Characteristics according to Master's Program Presence and Size in 1996-98

Master's program size, 1996-98	Percent public	Total enrollment	FTE enrollment	E&G expenditures per FTE	Endowment per FTE	Educational subsidy per FTE
No program	14.7	1,537	1,296	$12,197	$22,023	$10,470
Modest program	12.6	1,490	1,235	$11,596	$13,919	$9,272
Larger program	9.8	1,818	1,416	$11,207	$9,705	$7,545
All institutions	13.4	1,576	1,305	$11,903	$17,990	$9,709
N of cases	589	589	589	586	500	563

SOURCES: IPEDS Completions, Fall Enrollment, and Finance data; Williams Project on the Economics of Higher Education.

Category definitions:
Modest program - fewer than 20 master's degrees per year
Larger program - 20 or more master's degrees per year

NOTES:
1. The 2000 Carnegie Classification was based on data from 1995-96 through 1997-98.
2. Program size based on the average number of master's degrees conferred per year.
3. Institutions awarding 20 or more master's degrees per year were classified among Master's Colleges and Universities.
4. This table excludes institutions that were classified as Baccalaureate Colleges in 1994 despite awarding 20 or more master's degrees per year.
5. Endowment is beginning of year, market value.

Table 5—Regression Results for Two Models of the Number of Master's Degrees Awarded per Year, 1996-98

	Simple model		*Dual effects model*	
Independent variable	Coefficient	Beta	Coefficient	Beta
(Constant)	5.52	—	7.45	
Master's program 1989-91	20.05	0.34	14.74	0.25
Master's program size 1989-91	0.47	0.09	0.18	0.03
Public	-8.82	-0.12	-3.99	-0.05
x Master's program 1989-91	—	—	-21.84	-0.15
FTE enrollment (100s)	0.33	0.13	-0.02	-0.01
x Master's program 1989-91	—	—	1.81	0.52
Educational subsidy per FTE (1000s)	-0.54	-0.14	-0.36	-0.09
x Master's program 1989-91	—	—	-1.41	-0.26
Annual growth in demand (state)	0.47	0.03	0.50	0.03
x Master's program 1989-91	—	—	-0.10	-0.01
N	553		553	
F	25.815		23.856	
R-squared	0.221		0.305	

NOTES:

1. Because these models are based on a population rather than a sample, tests of statistical significance are not applicable.
2. The 1994 Classification was based on data from 1988-89 through 1990-91, and the 2000 Classification was based on data from 1995-96 through 1997-98.
3. Excludes institutions that were classified as Baccalaureate Colleges in 1994 despite awarding 20 or more master's degrees per year.

Table 6—Summary Information on Undergraduate Colleges Interviewed

Institution	FTE enrollment	Endowment per FTE	Educational subsidy per FTE	Master's degrees awarded			Ratio of bachelor's to master's degrees, 2001-02
				1989-91*	1997-98	2001-02	
Cameron University, OK (public)	827	$2,682	$5,780	18	92	158	3.2
Doane College, NE	1,095	$21,988	$4,951	0	169	263	1.3
George Fox University, OR	1,183	$2,562	$4,902	3	186	233	2.1
Le Moyne College, NY	2,069	$6,226	$4,839	0	122	164	3.1
Lebanon Valley College, PA	1,037	$11,438	$4,439	0	35	54	7.1
Loras College, IA	1,615	$9,003	$7,915	17	26	43	8.4
Mount Mary College, WI	1,117	$9,884	$6,744	5	36	38	4.0
Piedmont College, GA	563	$35,781	$7,793	0	249	410	0.6

*Three-year average.

NOTE:
Unless otherwise noted, institutions are privately controlled.

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